

USE OF COMPUTER AND TECHNOLOGY IN SECONDARY EDUCATION CURRICULA IN LIBYA

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ABSTRACT- The use of computer and information technology in the educational process is considered as a learning tool and an important matter for the delivery of information, because of its great potential in helping both the teacher and the student in the learning process. This research studies the reality of computer employment and information technology in the secondary education curricula in Libya. To address this issue, a pre-study questionnaire was completed by 300 teachers to find out whether teachers use computers in their teaching. The results showed that the vast majority of teachers do not use computers and information technology in teaching process. So, and based on these results, a post-study questionnaire was designed on the bases of suggested areas of difficulties. These included: software area; teachers' area; curricula area; physical possibilities area; students' area; and planning and training area.

The results showed that more intensity of difficulties was associated with the area of planning and training followed by the curriculum area, and then the software area. Whereas, the least intensity of difficulties was associated with students' area followed by teachers' area and then the area of human and material resources. Finally, for each studied area, suggestions and solutions were introduced to increase the effectiveness of the use of computer as an educational tool in teaching.

KEY WORDS: Secondary, Education, Informatics, Use/Employment of computer, Difficulties, software Area, curriculum, survey, planning and training.

I. INTRODUCTION

Generally, education today and secondary education in particular is regarded the way to be based on by the Arab society to encounter the challenges and risks posed by developments and rapid changes in science technology and economy, which the world has witnessed during the last quarter of this century. It is expected to continue in a very fast pace, because secondary education works for the preparation. of academic education students in technical and educational diverse specialties.

"Human Development Report prepared by the United Nations Development Programme in Libya indicates the increase in the relative weight in the preparation of students enrolled in secondary programs". [1]

"The curricula an essential component of education. It is a mirror that reflects or should reflect the society conditions it serves ,checking purposes, and facing economic and social needs to the extent that affects the community of changes in these areas as much as should be reflected on the education curricula in general and technical education in private [2].

II. RESEARCH PROBLEM

"It is with the computer age expands the possibilities of finding solutions to many of the important issues in the field of teaching and learning, solutions, and attested to by the ongoing computerization in the educational process in all countries and at all levels." [3].

Although the use of computers in education is regarded as a kind of educational innovation in the teaching and learning process, yet Libya – Ministry of Education – was notable to follow and keep up with this renewal. So the secondary education has declined significantly, where no development plans and programs have been adopted to serve the current and future labor market requirements, and no foreign or international assistance was sought in this field. Consequently, the computer and technology information became inactive element in secondary education curricula.

"Here lies the need for the use of modern technology – computer sciences—in curricula and education plans with a view to rehabilitate graduates to deal and interact with the novel changes applied in the modern educational systems in order to meet the challenges of the twenty-first century through the employment of computer and information in teaching various subjects in secondary education." [4]

Research shows that computer has had positive effects on the teaching and learning process. These include: helping to individualize education, taking into account individual differences among learners; providing feedback to the learner, increasing the collection and the acquisition of learning and computer skills; acquiring the positive tendencies and trends; reducing learning time; developing the problem-solving skills; implementing of many difficult experiments; installing the concepts and rounded off; saving the historical facts; and reducing the teaching burdens on the part of teachers...etc) [5]

In light of the above, and as the intention of the Libyan Ministry of Education, computer as a school subject was recently assigned to become one school subject among other subjects in the secondary education. Two-weekly computer lessons (forty minutes each) were allocated as a part of the school curricula.

Because of the importance of employing computer technology in the field of education and based on the current researcher's experience and work as a lecturer of computer sciences textbooks in the department of computer sciences in the College of Education, the problem of this research has emerged.It was noticed that the students'level in the computer and information, in spite of its presence as a method within the secondary school curriculum, is completely low; this is anattempt by the researcher to study the reality and difficulties of the implementation of computer and information technology in secondary education curricula.

III. THE IMPORTANCE OF RESEARCH

1. The current research is consistent with recent trends in the construction and development of the curriculum in terms of the employment of the computer.
2. The current research may contribute to show the responsible for the secondary education Curriculum the

hiring Computer in Education are owed to: the lack of providing enough computers; the lack of trained staff for the maintenance of computers; and the lack of appropriate software to the level of the students who will use these programs.

4. The results of Peter Bitter's study (28) 1985 showed that the difficulties which face the employment of computer education in Arizona is the lack of good educational software, and lack of trained personnel.

The current study aimed to recognize the reality of the employment of computers in secondary education curricula in Libya because of this sector great importance in the development of higher education students, also benefited researcher from previous studies in how to identify difficulties that prevent the application of computer and information technology in secondary education curricula through access or knowledge of the lists of the difficulties that have been prepared in previous studies.

VII. LIMITS OF RESEARCH

1. Computer curriculum content in secondary education curricula and other courses approved by the Ministry for the academic year 2014/2015.
2. A group of teachers of secondary education in Libya.
3. Identify difficulties that hinder the employment of computer and information technology and introduce proposals of treatment in order to increase the employment of computers in secondary education curricula.

VIII. SEARCH IDIOMS(DEFINITIONS OF KEY TERMS)

1. **Secondary Education:** This refers to one stage of education in Libya and the duration of the study is three years. This stage provides students with general knowledge and the practical skills relating to professional practices in the industry and commerce sectors." [7] This stage is also concerned with preparing students to pursue their next education stage, the university education.
2. **Informatics:** "It means the informative knowledge that expresses all what an individual needs to work efficiently in a society that depends on information. It includes the knowledge of basic computer skills and their use in data processing issues, and the economic and social impacts of the computer in the community, which has now become inevitable for all communities' needs "[8].
3. **Difficulty:** it refers to "the obstacles that prevent the hiring of computers in secondary education curricula and not coping with the modern trends adopted for the design of curricula in order to achieve the desired goals of the labor market."
4. **Use/Employment of computer:** "It means the use of computer skills and facilities as a school subject or an educational assistant in the teaching of different materials in secondary education, whether theoretical or practical through the use of computer programs or through practice and exercise and simulation in order to achieve the objectives of these subjects in secondary education.

IX. SEARCH PROCEDURES:

1. **Answering the questions:**
 - **Answer of the first question:** What is the reality application of computer and information technology as a subject in secondary education curricula in Libya?
To study the reality of Computer and IT application as a subject in secondary education curricula, the researcher conducted visits to some secondary schools and monitoring of

difficulties that prevent the employment of computer in secondary education curricula.

3. The current research addresses a vital and important sector in the secondary education sector, upon which development plans and programs are depended on to a large extent. The more the basic components, such as curriculum and hiring computer and information, become available for this sector, the more increase of positive impact noted on the rest of the economic and social sectors.
4. The current research may be considered a foundation stone of future research in the field of employing the computer in the curriculum of secondary education that will contribute in the future to the development of curricula.

IV. RESEARCH OBJECTIVES

The current research aims to identify: -

1. Identify the actual application of computer and information technology in secondary education curricula in Libya.
2. Explore the difficulties that hinder the application of computer and information technology capabilities in the secondary education curricula in Libya
3. Come up with recommendations and proposals to increase the effectiveness of application of computer and information technology in secondary education curricula in Libya.

V. RESEARCH QUESTIONS

1. What is the actual application or use of computer and information as basic material in the secondary education curricula in Libya?
2. What is the actual current use of computer and information technology in teaching and delivery of information in the secondary education curricula in Libya?
3. What are the difficulties that hinder the application of computer and information technology in teaching secondary education curricula in Libya?
4. What proposals that could contribute to more effective application of computer and information technology in secondary education curricula in Libya?

VI. PREVIOUS STUDIES

1. Dr. Abu Zeid's Study, Dr. Ammar [6] pointed out: the need to take advantage of the ready-made programs available in English, which can serve the courses of specialized technical education through translation or development to match the Arab environment, and the need to provide a sufficient number of teachers who are capable of using ready-made software, and provide a sufficient number of qualified trainers to train teachers to use the software, and to supply schools with computer laboratories to suit the number of students and provide them with modern equipment.
2. Maurer (451986) studied the barriers that prevent the application and use of computer technology in education in Society College in California. The researcher prepared a questionnaire included a series of obstacles and chose a sample study from education coordinators with Computer Aid in community colleges and manufacturers of IT Hardware and software publishers and specialists in education Computer Aided. The study indicated that a shortage of teaching staff was the first factor as lack of financial resources also ranked high position among the obstacles.
3. A study conducted by the agency of education in the state of Texas Austin in 1986 [10] to identify the obstacles to

Education, Office of Educational inspection, Table (1) set forth below shows the percentages of the computer as a subject:

School year	The course	Number of allotted hours	percentage
1st	IT	2	5.72%
2 nd	IT	2	5.72%
3 rd	IT	2	5.72%

Table (1) percentage of computer as a subject in educational plan in secondary education.

The above table shows that two sessions per week are devoted for teaching computer as a subject matter in secondary education, (40 minutes a session) by 5.72% of the total study plan which total number of periods (35) periods, in each year of the study.

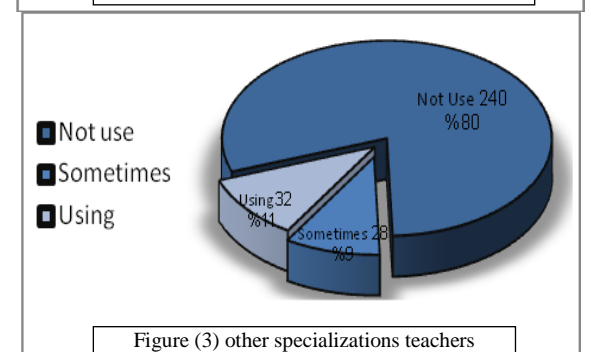
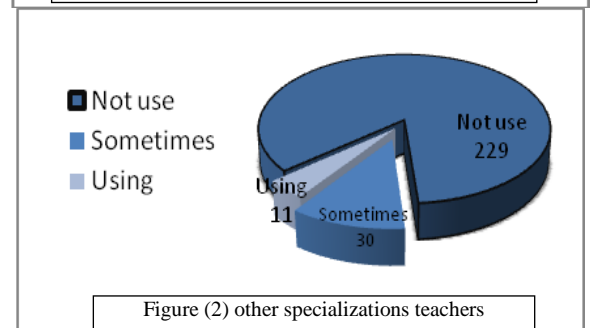
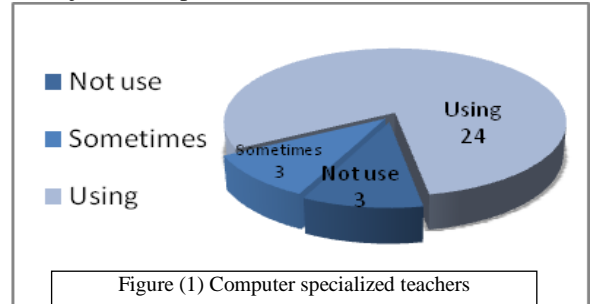
This indicates that the computer course included in the study plan and a reasonable proportion to the total study plan compared to the number of hours allocated by the Gulf Cooperation Council (GCC) computer course, where Saudi Arabia has allocated in its academic credit hours and the Sultanate of Oman (3) classes. The researcher refers this to the early interest of the Ministry of Education in Libya by the computer, when it is observed the continuous development of curricula in Libya and the ongoing review, and modifying of it more than once, in line with the scientific development of this technology.

- **Answer the second question:** What is the reality application of computer and information technology in teaching and delivery of information in the secondary education curricula in Libya?

In this study, the researcher conducted a questionnaire on (300 teachers) of the computer course, and teachers of other subjects:

1. Identify the aim of the questionnaire: the questionnaire aims to find out how the use of computers in teaching various specializations and school courses suggested by teachers at the secondary level, and employed in the delivery of information to the student in the State of Libya, through the collection of specialist teachers' opinions who are studying computer curricula, and teachers non-specialists who study other branches of science.
2. Identification of the questionnaire content: After defining the goal of the survey then determine the content, which is only one question: [Do you use computers in your teaching to your course as an agent to deliver information].
3. Presentation and discussion of the results of the questionnaire: The researcher calculates the percentages of the computer as a teaching tool in the secondary education curricula and the results are shown in Table (2) and forms (1), (2), (3) Next:

S.N	The roll	specialization		Total	Percentage
		computer	other		
1	Teachers aren't using computers in education	3	229	240	80%
2	Teachers sometimes are using computers in education	3	30	28	9.33%
3	Teachers using computers in education	24	11	32	10.66%



- It can be seen from the above table that the computer employing as a teaching tool in the general plan for secondary education was through the courses of the first, the second and the third year of secondary education, and the ratio employment of computer came as an educational tool (of the teachers who answered yes or who answered with sometimes including no more than (20 %), and this percentage is very simple compared to 80% who do not use the computer guy at all the educational process.
- According to the researcher, this may be owed to the availability of computer teachers in secondary education graduated of computer sections of the Colleges of Education and Information Technology and higher specialized institutes, and therefore the high academic level for specialists making them take into account technological advances factor and the need to use and employ computers in teaching in the classroom, while in the rest of the other branches of the curriculum they were neglected and eliminated of the computer and its importance in teaching and delivery of information to the students.
- **Answer to the third question:** What are the difficulties that hinder the application of computer and information technology in teaching secondary education curricula in Libya?

To answer this question, the researcher conducted another questionnaire on (32 teachers) of computer course, and teachers of other subjects, for the academic year 2014/2015, and the second questionnaire came as a result of the first questionnaire.

1. **Identify the objective of the questionnaire:** the questionnaire designed to identify difficulties that hinder the employment of computer use in teaching secondary

education curricula in various courses in the State of Libya by collecting opinions specialist teachers who are teaching specialization courses in the computer, and teachers who aren't specialists and teaching the branches of other sciences.

2. **Identification of the questionnaire content:** After defining the goal of the survey, the questionnaire content was determined through:

1. Awareness of previous studies and researches in the field of difficulties in general, and in the field of computer and information technology in particular.
2. Through studies and previous researches, the researcher collects a number of difficulties and formulate another set of difficulties that hinder the employment of computer and information technology in secondary education curricula, the questionnaire has included a series of difficulties related to the following areas:
 The first area: software includes (7) difficulties
 The second area: teachers and includes (9) difficulties
 The third area: Curriculum includes (5) difficulties
 The fourth area: potential human and material difficulties that includes (6) difficulties
 The Fifth area: Students includes (3) difficulties
 The sixth area: planning, training which includes (7) difficulties

And thus the questionnaire content of 37 phrase, each phrase represents the difficulty of the difficulties that hinder the employment of computer and information technology in secondary education curricula.

3. **Formulating vocabulary questionnaire:** After selecting the questionnaire axes, the researcher drafted vocabulary questionnaire took into account the difficulties formulating using short phrases to describe the difficulty, being restricted to a single phrase difficulty.

4. **Correction questionnaire:** researcher relied on the quantification method in the development of the questionnaire estimates, so that it can access to find out the difficulties that hinder the employment of computer and information technology in secondary education curricula are closer to the objective, where it was put in front of all the difficulty in the questionnaire triple sliding scale determines showing the degree of availability of difficulty (Yes - sometimes - not) and the person who is filling out the questionnaire that puts the mark (√) in front of the degree of difficulty provide he deems it appropriate.

5. **Believe the questionnaire:** The questionnaire has been offered to a group of teachers staff of the Faculty of Education, University of Misurata in various disciplines in the curriculum and teaching methods, education, psychology, and computer, and the Arabic language, in order to identify their views on the questionnaire in terms of, the extent of his words accuracy in measuring what developed to measure and drafting accuracy linguistic phrases that describe the difficulties and the accuracy of the representation of the difficulties of the areas that belong to it, and to add, delete, modify some of the difficulties, and the summing which became apparent that there was an agreement between the arbitrators on the areas and paragraphs of the questionnaire and that they relate to the objectives of the study, so the questionnaire become valid.

6. **Identify difficulties:** to identify the difficulties in each of the areas, the researcher calculates the arithmetic average of the relative importance of the difficulties involved in the survey in each of the different areas that hinder the

1- Difficulties related to the software:

N	Difficulty	Ratio			Mi-d-dle	Ma-n-ner	R.wei-ght	Ord-e-ring
		Ye-s-3	Som-T-2	No-1				
1	High price of ready software that can serve studying courses	27	3	2	2.78	3	92.72 %	1
2	lack of ready software serves courses as Q&A and additional home exercises.	26	5	1	2.78	3	92.71 %	2
3	severe deficiencies in the production of Arabic software that serves the courses.	24	6	2	92.6	3	89.6 %	3
4	Most of the ready-made programs that serve the courses available in English, which is a difficulty for some students and teachers to handle.	15	14	3	2.56	3	85.4 %	4
5	Rise in costs of preparing educational software that serves the courses.	20	9	3	2.53	3	84.4 %	5
6	Inadequacy of ready-made software for the curriculum.	16	15	1	2.469	3	82.3 %	6
7	Difficulty of designing educational software that serves the curriculum.	21	5	6	2.47	3	82.3 %	6
Average weights							87.6 %	

Table (3) concerning difficulties in software area

2- Difficulties related to teachers:

N	Difficulty	Ratio			Mi-d-dle	Ma-n-ner	R.wei-ght	Orde-ring
		Yes-3	Som-T-2	No-1				
1	teachers lack of knowledge of educational software that serves the courses.	29	3	0	2.91	3	96.9 %	1
2	the computer teachers in schools didn't cooperate with teachers of other subjects	29	2	0	2.94	3	97.9 %	2
3	most teachers lack of familiarity with the computer and its potential in the educational process.	23	6	3	2.63	3	87.5 %	3

4	lack of qualified instructors to train teachers to use the software in the specialty	21	9	2	2.57	3	85.5%	4
5	Lack of scientific journals and magazines that educate teachers of the importance of the use of computers in teaching and delivery of information.	20	10	2	2.56	3	85.4%	5
6	the lack of a sufficient number of teachers who are able to use ready-made software that serve their courses.	11	15	6	2.156	2	71.9%	6
7	lack of familiarity with computer teachers to produce and evaluate educational software.	12	10	10	2.063	3	68.8%	7
8	small number of computer teachers as teaching subject.	16	10	6	2.313	3	67.7%	8
9	reluctance of many teachers to learn the computer and its use in teaching and learning process.	9	15	8	2.031	2	67.7%	8
Average weights							81%	

Table (4) concerning difficulties in software area

	courses, which makes it difficult to produce their own educational software process.							
5	lack of courses designed to teach programmatically through educational programs for students.	03	2	0	2.94	3	98%	5
Average weights							89.18%	

Table (5) difficulties related to the curriculum area

4- Regarding the financial means:

N	Difficulty	Ratio			Mid-dle	Ma-n-ner	R.wei-ght	Ord-e-ring
		Yes 3	SomT 2	No 1				
1	lack of labs according to students number.	29	1	0	294	3	98%	1
2	lack of ongoing maintenance of computer hardware equipment.	26	4	0	288	3	95.8%	2
3	no support from the private sector in the training of teachers on educational software.	24	6	0	281	3	93.6%	3
4	lack of modern equipment in schools.	25	3	2	278	3	92.6%	4
5	The few number of devices and equipment in the computer lab.	21	7	2	288	3	88.7%	6
Average weights							93.4%	2%

Table (6) regarding the difficulties of financial prospects

5- concerned with students

3- Difficulties related to the curriculum:

N	Difficulty	Ratio			Mid-dle	Ma-n-ner	R.wei-ght	Ord-e-ring
		Yes 3	SomT 2	No 1				
1	Lack of assessment models for the development of electronic questions to test student achievement, especially in the transport stages of the process.	31	1	0	3.00	3	100%	1
2	there are many methods of computer topics should be deleted.	11	18	3	2.281	2	76.03%	2
3	computer curricula doesn't contain many of the necessary and important topics.	18	13	3	2.406	2	80.2%	3
4	predominance of the theoretical nature of the practical side of specialized	25	6	1	2.75	3	91.7%	4

N	Difficulty	Ratio			Mid-dle	Ma-n-ner	R.wei-ght	Ord-e-ring
		Yes 3	SomT 2	No 1				
1	the weakness of the level of educational achievement at the secondary school students.	26	4	0	2.469	3	82.3%	1
2	students feel that the curriculum that offer does not satisfy their desires.	24	6	0	2.406	3	80.2%	2
3	The weak students willing to learn the computer.	24	6	0	1.906	2	63.5%	3
Average weights							75.3%	4%

Table (7) regarding the difficulties of students area

6- Difficulties related to planning and training:

N	Difficulty	Ratio			Mi d- dle	M an- ner	R.we i- ght	Ord e- ring
		Ye s 3	Som T 2	No 1				
1	The lack of a plan to modify the curriculum so that the computer employs to teach.	28	1	0	2.9 7	3	99%	1
2	The lack of a plan to train teachers to use computers in teaching.	26	3	0	2.9 1	3	97%	2
3	The absence of a general plan for maintenance of the devices on computer labs.	22	1	0	2.7 8	3	92.7 1%	3
4	The lack of coordination between departments and training curricula and education regarding the use of computers in education	25	4	0	2.8 8	3	96%	4
5	lack of communication between specialists university professors and teachers of secondary education in that respect.	24	5	0	2.8 4	3	94.7 %	5
6	Non-university cooperation with the Ministry of Education for the adoption of lectures, seminars and panel discussions for the edification the teachers of the importance of the employment of computers in teaching.	23	6	0	2.8 1	3	93.6 %	6
7	The absence of a plan for the production of educational software that serves the courses.	27	2	0	2.7 8	3	92.7 1%	7
Average weights							95.50	

Table (8) difficulties related to the curriculum area

7. Presentation and discussion of the survey results:

- In the field of software the more difficulty intensity was ~~rising of price for ready software that can serve the courses,~~ where the arithmetic average was a 2.78 and the relative weight of 92.72% prices, and fewer difficulties alone in the same area was the difficulty of designing of educational software that serves the courses, where the arithmetic average reach (2.47) and the relative weight of 82.3%.

According to the researcher, this is because the lack of attention to this area by specialists in the field of software in the State of Libya, which form a barrier to both the student and the teacher in the acquisition, and consistent results of the current study with the study conducted by Maurer, California, America, where this study confirmed that the lack of financial resources occupied high position among the obstacles.

- In the field of teachers more difficulties intensity were lack of teachers knowledge of the educational software that serves the courses, where the arithmetic mean was 2.9375 and the relative weight of 97.9%, and less difficulties intensity in the same area was the reluctance of many teachers to learn the computer and its use in teaching and learning process, where the mean was 2.031, while its relative weight has reached 67.7%.

The researcher refers these difficulties in the field of teachers to the lack of real preparation of teachers in secondary education during his university study and not focusing on the computer and using it as an educational tool, and consistent results of the current study with previous studies, Peter study, where this study confirmed that the lack of familiarity on the part of the teacher software and training are of the most important obstacles to employ computer in the field of education.

- In the area of curriculum the most difficult intensity was lack of assessment models for the development of electronic questions to test student achievement, especially in the transport stages of the process, and the least of intensity in the same area was the lack of courses designed to programmatically taught through educational programs for students.

Researcher refers that to lack of coordination between curriculum specialist in secondary education and specialist computer so some of the topics that serve the students should be included in order to increase their motive to learn..

- In the field of human and material resources were more difficulties intensity was not lack of labs according to the number of students, and less difficulties intensity in the same area was limiting the use of computer lab on computer teachers only.

Researcher refers that to the fact that secondary schools suffer from shortage in the number of labs as well as students for each device was up 20 students, it is a large percentage.

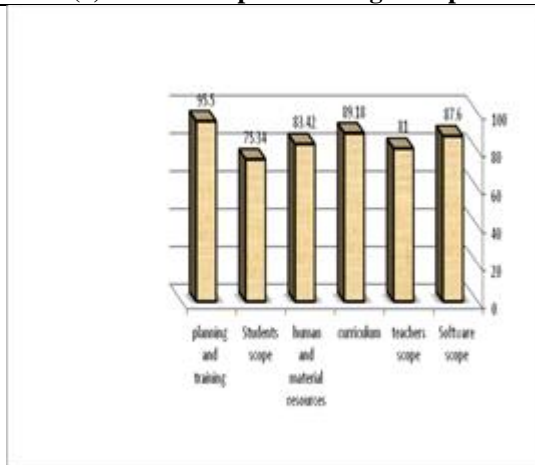
- In the area of students were more difficulties intensity was the weakness of general level of educational achievement at secondary school students where the arithmetic mean was a 2.469, and the relative weight was 82.3%, and less difficulties intensity in the same area is the sense of the students that the curriculum that offer does not satisfy their desires, or they are less from the level where the arithmetic mean 2.2 and a relative importance of 73.3%.

- In the field of planning the more difficulties intensity was the lack of a plan to modify courses in training and business so that the computer is employed to teach where the arithmetic mean was 2.97 with the relative importance of 99%.

Through tables set forth above table (3) to table (8), was reached to arithmetic mean between the relative weights for all difficulties in one area, to know the order of fields in order of importance, and draw a diagram of it as shown as follows (4).

Software scope	87.6
teachers scope	81
The scope of curriculum	89.18
The field of human and material resources	83.42
Students scope	75.34
The scope of planning and training	95.50

Table (9)order of scope according to importance



X. RECOMMENDATIONS

The answer to the Fourth question: What proposals that could contribute to more effective application of computer and information technology in secondary education curricula in Libya?

By the results of the questionnaire, and through personal interviews with teachers, inspectors and principals, It has been arrived to a set of proposals which might contribute to the employment of computer in secondary education curricula according to the above areas, the following statement of such proposals, which can be termed.

First, in the area of software:

- 1- The need for translation of software available in English into Arabic in order to take advantage of them.
- 2- Work on transferring specialized curricula in secondary education to educational programs taught by computer.
- 3- There should be a financial support by the Ministry for the production of educational programs.
- 4- Develop a training plan for the suppliers of the curriculum, teachers and inspectors secondary education on educational software that serves the secondary education curriculum.

Second, in the area of teachers:

- 1- The need to provide a sufficient number of teachers who are able to use ready-made software that serves the courses they teach.
- 2- The need for concentrated training programs for teachers of computer software on the production processes.
- 3- Work on increasing cooperation between the Computer teachers and school teachers of other subjects.

Third, in the area of curricula: -

- 1- preparation computer teachers curriculum in the College of Education which contain many necessary and important issues that contribute in the design of educational software that serves the specialized courses in secondary education.
- 2- The need to focus on the practical side in the use of computers.
- 3- The authors of books into account the application of computer in the high school curriculum.

Fourth, in the field of material and human resources: -

1. The need to provide modern labs in schools that match the number of students.
2. The need to provide a sufficient number of maintenance specialists.
3. Develop a general plan for maintenance of the devices in the computer labs so that they can repair the damaged ones.

Fifth, in the field of students:-

1. working to develop tendencies and trends of the students towards the computer.
2. The use of teaching strategies that commensurate with secondary education students learning in the teaching process

Sixth, in the field of students:-

Work to increase the students' attitudes toward computer by highlighting the various applications of the computer in the market.

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